AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended) A data multiplexing apparatus for multiplexing a plurality of packet streams and outputting a multiplexed packet stream, the data multiplexing apparatus comprising:

a data multiplexing unit operable to generate a first~~multiplexed packet~~ stream by multiplexing at least one first packet stream and a plurality of null packets by combining the at least one first packet stream with an appropriate number of the null packets so that the ~~multiplexed packet~~first stream is outputted at a predetermined transmission rate~~, said null packets being inserted into said first multiplexed packet stream; and~~;

a packet stream storage unit including locations for storing a second packet stream, the second packet stream including predetermined blocks of packets, each predetermined block including a starting packet; and

a packet replacement unit operable to generate the multiplexed packet stream by replacing at least some of the~~inserted~~ null packets of the first stream with packets~~that constitute a~~ of the second packet stream[[.]],

wherein the packet replacement unit comprises:

an address obtaining subunit operable to obtain an address, in the packet stream storage unit, for each location at which the starting packets of the predetermined blocks of packets are stored;

a null packet detection subunit operable to detect the null packets within the first stream;

a packet number obtaining subunit operable to obtain a number of packets for each predetermined block of packets of the second packet stream; and

a packet replacement subunit operable to generate the multiplexed packet stream by replacing at least some of the null packets detected by the null packet detection subunit with the packets of at least one of the predetermined blocks of the second packet stream, in sequence, and starting from the starting packet at the address obtained by the address obtaining subunit, a number of packets replacing the null packets being equivalent to the number of packets of the predetermined block obtained by the packet number obtaining subunit.

- 4 -

Claim 2 (Cancelled)

Claim 3 (Cancelled)

Claim 4 (Currently Amended)   The data multiplexing apparatus according to Claim 3, 1, wherein the number of packets for each predetermined block obtained by the packet number obtainment obtaining subunit is equal to or less than the a total number of packets included in said each predetermined block on of the second packet stream stored in the packet stream storage unit.

Claim 5 (Currently Amended)   The data multiplexing apparatus according to Claim 2, 1, wherein the packet replacement subunit starts replacing the null packets when the address obtainment obtaining subunit obtains the an address of a starting packet of one of the predetermined blocks.

Claim 6 (Currently Amended)   The data multiplexing apparatus according to Claim 1, further comprising: wherein:

    a the packet stream storage unit having includes an area locations for storing packet streams one by one stream-by-stream; and

    the data multiplexing apparatus further comprises:

    a multiplexing order generation unit operable to generate order information indicating an order of packets to be multiplexed into to form the first multiplexed packet stream in, for every cycle of a predetermined period of time;

    a multiplexing order storage unit operable to hold the store the order information indicating the order generated by the multiplexing order generation unit;

    a flag generation unit operable to generate, in the multiplexing order storage unit, a flag indicating a state of how the packets are stored in the multiplexing order packet stream storage unit; and

    a multiplexing total number control unit operable to determine the a total number of packets to be multiplexed for every cycle of the in said every predetermined

period of time, based on the flag generated by the flag generation unit.

Claim 7 (Currently Amended)   The data multiplexing apparatus according to Claim 6, wherein the flag generated by the flag generation unit ~~has~~ includes a first flag and a second flag, ~~said~~ the first flag indicating that ~~the~~ a number of stored packets is equal to or less than a first predetermined value, ~~said~~ the second flag indicating that the number of stored packets is equal to or more than a second predetermined value.

Claim 8 (Currently Amended)   The data multiplexing apparatus according to Claim 1, wherein the second packet stream ~~is made up of~~ comprises data having no time-base information.

Claim 9 (Previously Presented)   The data multiplexing apparatus according to Claim 8, wherein the second packet stream is a packet stream of private data.

Claim 10 (Previously Presented)   The data multiplexing apparatus according to Claim 1, wherein the first packet stream is a packet stream including at least one of a video signal and an audio signal.

Claim 11 (Currently Amended)   The data multiplexing apparatus according to claim ~~2,~~ 1, wherein the packet stream storage unit is a synchronous dynamic RAM.

Claim 12 (Currently Amended)   A transmission apparatus for multiplexing a plurality of packet streams and transmitting a multiplexed packet stream, the transmission apparatus comprising:

a data multiplexing unit operable to generate a first ~~multiplexed packet~~ stream by multiplexing at least one first packet stream and a plurality of null packets by combining the at least one first packet stream with an appropriate number of the null packets so that the ~~multiplexed packet~~first stream is outputted at a predetermined transmission rate, ~~said~~ ~~null packets being inserted into said first multiplexed packet stream~~;

a packet stream storage unit including locations for storing a second packet

stream, the second packet stream including predetermined blocks of packets, each predetermined block including a starting packet;

a packet replacement unit operable to generate the multiplexed packet stream by replacing at least some of the inserted null packets of the first stream with packets that constitute a of the second packet stream[[,]]; and

a transmission unit operable to transmit the multiplexed packet stream generated by the packet replacement unit[[.]],

wherein the packet replacement unit comprises:

an address obtaining subunit operable to obtain an address, in the packet stream storage unit, for each location at which the starting packets of the predetermined blocks of packets are stored;

a null packet detection subunit operable to detect the null packets within the first stream;

a packet number obtaining subunit operable to obtain a number of packets for each predetermined block of packets of the second packet stream; and

a packet replacement subunit operable to generate the multiplexed packet stream by replacing at least some of the null packets detected by the null packet detection subunit with the packets of at least one of the predetermined blocks of the second packet stream, in sequence, and starting from the starting packet at the address obtained by the address obtaining subunit, a number of packets replacing the null packets being equivalent to the number of packets of the predetermined block obtained by the packet number obtaining subunit.

Claim 13 (Currently Amended)   A data multiplexing method for using a data multiplexing apparatus for multiplexing a plurality of packet streams and outputting a multiplexed packet stream, the data multiplexing apparatus including a packet stream storage unit including locations for storing a second packet stream, the second packet stream including predetermined blocks of packets, each predetermined block including a starting packet, the data multiplexing method comprising:

a data multiplexing step of generating a first multiplexed packet stream by multiplexing at least one first packet stream and a plurality of null packets by combining

the at least one first packet stream with an appropriate number of the null packets so that the ~~multiplexed packet~~first stream is outputted at a predetermined transmission rate~~, said null packets being inserted into said first multiplexed packet stream~~; and

~~a packet replacement step of~~ generating the multiplexed packet stream by replacing at least some of the ~~inserted~~ null packets of the first stream with packets ~~that constitute a~~ of the second packet stream[[.]]_,_

wherein said generating of the multiplexed packet stream further comprises:

obtaining an address, in the packet stream storage unit, for each location at which the starting packets of the predetermined blocks of packets are stored;

detecting the null packets within the first stream;

obtaining a number of packets for each predetermined block of packets of the second packet stream; and

generating the multiplexed packet stream by replacing at least some of the null packets, detected by said detecting of the null packets, with the packets of at least one of the predetermined blocks of the second packet stream, in sequence, and starting from the starting packet at the address obtained by said obtaining of the address, a number of packets replacing the null packets being equivalent to the number of packets of the predetermined block obtained by said obtaining of the number of packets.

Claim 14 (Currently Amended)   A computer program recorded on a computer-readable recording medium, the computer program for using a data multiplexing apparatus for multiplexing a plurality of packet streams and outputting a multiplexed packet stream, the data multiplexing apparatus including a packet stream storage unit including locations for storing a second packet stream, the second packet stream including predetermined blocks of packets, each predetermined block including a starting packet, the computer program causing ~~a~~ the data multiplexing apparatus ~~computer~~ to execute a method comprising:

~~a data multiplexing step of~~ generating a first ~~multiplexed packet~~ stream by multiplexing at least one first packet stream and a plurality of null packets by combining the at least one first packet stream with an appropriate number of the null packets so that the ~~multiplexed packet~~first stream is outputted at a predetermined transmission rate~~, said~~

~~null packets being inserted into said first multiplexed packet stream~~; and

~~a packet replacement step of~~ generating the multiplexed packet stream by replacing <u>at least some of</u> the ~~inserted~~ null packets <u>of the first stream</u> with packets ~~that constitute a~~ <u>of the</u> second packet stream[[.]]<u>,</u>

<u>wherein said generating of the multiplexed packet stream further comprises:</u>

<u>obtaining an address, in the packet stream storage unit, for each location at which the starting packets of the predetermined blocks of packets are stored;</u>

<u>detecting the null packets within the first stream;</u>

<u>obtaining a number of packets for each predetermined block of packets of the second packet stream; and</u>

<u>generating the multiplexed packet stream by replacing at least some of the null packets, detected by said detecting of the null packets, with the packets of at least one of the predetermined blocks of the second packet stream, in sequence, and starting from the starting packet at the address obtained by said obtaining of the address, a number of packets replacing the null packets being equivalent to the number of packets of the predetermined block obtained by said obtaining of the number of packets.</u>

Claim 15 (Previously Presented)   The data multiplexing apparatus according to claim 6, wherein the packet stream storage unit is a synchronous dynamic RAM.